

HELIOPHILA SESELIFOLIA (BRASSICACEAE): A NEW WEED FOR WESTERN AUSTRALIA

By GREG KEIGHERY

Keiran MacNamara Conservation Science Centre,
Department of Parks and Wildlife, Locked Bag 104,
Bentley Delivery Centre, Western Australia, 6983.

ABSTRACT

Heliophila seselifolia Burch. ex DC. (Brassicaceae) is recorded as a new naturalised alien for Western Australia and Australia. The mode of introduction and establishment of this southern African species are unknown and deserve further study.

INTRODUCTION

The purpose of this brief note is to identify and record a new weed for Australia.

The Brassicaceae (Radish or Turnip Family) is represented in Australia by 20 genera and 111 species of native plants and 33 genera and 64 non-native or exotic species (Australian Plant Census, 2013). The family was revised for the Flora of Australia by Hewson (1982); however, since that revision new species of both native (Keighery, 2002 and 2008) and weedy (Keighery, 1996) members have been described and recorded. The family is a very close natural group possessing few reliable and often obscure characters by which to differentiate species and genera.

During botanical/floristic survey work of the Western Australian Agricultural Zone for the State Salinity Action Plan (Keighery *et*

al., 2004) an unknown annual herb (Figure 1) was collected from a naturally saline site at Gunyidi, Shire of Coorow, ~200 km north of Perth. The plants were not able to be placed into any described species or genus known in WA. Subsequently, the voucher collections {12.5 Km ENE Gunyidi on south side of Gunyidi to Nugadong road, 5-Oct.-2000, MN & SD Lyons 3000 and 3001 (in flower and fruit); Same Locality, 29-Aug.-2003, R.G. Rees 42 (in flower)} were deposited in PERTH, placed in the Brassicaceae, but not allocated to a genus (instead, referred to as Genus sp (R.G. Rees 42)).

DISCUSSION

Upon comparison with specimens of Australian and overseas Brassicaceae held at Melbourne Herbarium, it seemed



Figure 1. a: whole plant; b: mature pods; c: mature pod; d: leaf. Scale bar = 1 cm.

increasingly likely that the species was not a new and previously undescribed native Brassicaceae, but was closest to the endemic African genus *Heliophila*. This was confirmed when plant material and sketches were sent to Dr Al-Shehbaz of Missouri Botanic Garden, a worldwide expert on the family Brassicaceae. This resulted in the collections in the Western Australian Herbarium being allocated to *Heliophila*, e.g. as *Heliophila* sp. Gunyidi (R.G. Rees 42).

When the Gunyidi material was compared to the keys and descriptions of all 75 members of the genus *Heliophila* in Marias (1970) the collections fell within the variable and widespread species, *Heliophila seselifolia* Burch. ex DC., a species that extends from southern Namibia to the western Cape of South Africa (Raimondo *et al.*, 2009). The species has three subspecies in southern Africa, and the WA material appears closest to *H. seselifolia* var. *seselifolia*, but has small flowers for this variety. Hence, the Gunyidi population is not a localised native, but a perplexing new weed of southern African origin.

There are only two species of *Heliophila* listed as weeds in Randall (2002). *Heliophila coronopifolia* L. (Blue Eyes) a commonly grown ornamental has been recorded once as a casual alien in Auckland New Zealand (Landcare Research New Zealand, 2001). *Heliophila pusilla*

L.f. is now a very widespread weed of near coastal sandy soils from Cervantes to Esperance in southern Western Australia. This species entered Western Australia early after settlement, probably as a contaminant of fodder or ballast. The first collections were by James Drummond in the 1840's, Oldfield at Fremantle in 1859/60 and Margaret Forrest at Perth in 1878. This species can reach very large populations in bushland, especially after disturbance, but is a slender small annual which is rarely controlled, nor has it been studied for it's biodiversity impact. This species has recently been recorded from Kangaroo Island in South Australia, suggesting that it is still actively spreading, probably in soil or as seed contaminants despite a long residence.

There are no other records of *H. sessilifolia* as a weed. The mode of introduction and length of occurrence in Western Australia are both a mystery, and deserve further study, before attempting to rate its potential impact or spread. Like the preceding species it is an annual which produces large seed crops, the species is widespread, often very common locally and morphologically variable in South Africa. Precautionary principles would favour eradication of this population as was undertaken for another new Brassicaceae weed, *Succowia balaerica* (Keighery, 1995).

ACKNOWLEDGEMENTS

Dr Al-Shehbaz of Missouri Botanic Garden for confirmation that the population was a species of *Heliophila*. The Government of Western Australia funded the Biological Survey of the Western Australian Agricultural Zone under the State Salinity Plan. Nadine Guthrie drew the illustrations. John Dodd (Department of Agriculture and Food) constructively improved the manuscript.

REFERENCES

AUSTRALIAN PLANT CENSUS 2013. <http://www.cpbr.gov.au/chah/apc/index.html> (accessed 1-Nov-2013).

HEWSON, H. J. 1982. Brassicaceae. Pp.231–357 in: A.S. George (Ed) Flora of Australia 8. Australian Government Publishing Service, Canberra.

KEIGHERY, G.J. 1996. *Succowia balaerica* (Brassicaceae): a new and potentially serious weed in Western Australia. *Nuytsia* **11**: 139–140.

KEIGHERY, G.J. 2002. Taxonomic notes on the genus *Stenopetalum* (Brassicaceae). *Nuytsia* **14**: 393–403.

KEIGHERY G.J. 2008. A new species of *Rorippa* (Brassicaceae) from southern Western Australia. *Nuytsia* **18**: 79–82.

KEIGHERY, G.J., HALSE, S.A., HARVEY, M.S., and MCKENZIE, N.L. (Eds) 2004. A biodiversity survey of the Western Australian agricultural zone. Records Western Australian Museum Supplement **67**.

LANDCARE RESEARCH NEW ZEALAND 2001. Plant Names Database (<http://nzflora.landcarereasearch.co.nz/plant> accessed 10-1-2014).

MARIAS, W. 1970. Cruciferae In : L.E. Codd, B. de Winter, B.J.B. Killick and H.B. Rycroft (eds) Flora of Southern Africa, Vol. **13**: 1–118, Botanical Research Institute, Pretoria.

RANDALL, R.P. 2002. A Global Compendium of Weeds. R.G. and F.J. Richardson, Melbourne.

RAIMONDO, D., VANSTADEN, L., FODEN, W. VICTOR, J.E., HELME, N.A., TURNER, R.C., KAMUNDI, D.A. and MANYAMA, P.A. 2009. Red List of South African Plants. *Strelitzia* **25**. South African National Biodiversity Institute, Pretoria (also <http://redlist.sanbi.org/species.php> accessed 10-11-2013)